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# A STUDY OF CANADIAN CATTLE PRICES AND PRICE SPREADS

BY

MURRAY H. HAWKINS

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# ABSTRACT

The importance of the retail and wholesale beef price spreads has long been neglected in the field of Agricultural Economics. The concept of cattle prices and beef price spreads being highly related has only recently been explored. This study was an attempt to test the hypothesis that the farm-retail spread was important in explaining variations in cattle prices.

Despite the weaknesses of the available data, stepwise regressions and correlation techniques were used to examine hypothetical relationships existing in the livestock and meat industry. Special attention was given to the relationships existing between livestock receipts, cattle prices and the Canadian cattle slaughter. A brief encounter with the theory of countervailing power is left to the last chapter in the thesis. Further study into current applications of the original concept, as outlined by J. K. Galbraith, is warranted in view of changing power relations in the meat industry.

Many interesting and unusual relationships were found. Attention might be focussed on the declining wholesale spread, however, more attention should be given to the ever widening retail spread. The failure of the Canadian cattle slaughter to explain any significant portion of the variation in cattle prices should be further investigated. From the many correlations calculated there emerged a glimpse of an important variable in the livestock industry. Cattle receipts on the Toronto market appeared to be a vital factor in determining the width of the wholesale and retail beef price spreads on the markets studied. Furthermore, cattle prices and receipts at Toronto are highly correlated. Since

live prices on the other markets are highly correlated with Toronto's cattle prices, live receipts on the Toronto market increase in importance as a useful tool in forecasting live prices in the cattle industry.

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# CHAPTER I

# INTRODUCTION

Canadians spend 11 percent of their family income on beef and beef products. Canadian farmers receive 17.4 percent of their total income from the sale for slaughter of cattle and calves (28). Since beef is of major importance to both consumers and producers, there is a need to know and understand more about the factors affecting live cattle and beef prices.

## Purpose

The primary purpose of this study was to examine the behavior of the farm-retail beef price spreads and their relationships to live cattle prices. More knowledge was needed concerning the relationships existing between the number of cattle slaughtered, cattle prices, wholesale carcass prices, retail beef prices and the retail and wholesale beef price spreads in Canada.

A more thorough understanding of the relationships existing between the above factors would help the producer in marketing his cattle. This in turn would benefit the consumer through a more uniform supply of beef at reasonable prices.

## The Problem

Risk and uncertainty play an important part in reducing the efficiency of a cattle feeder's decisions and operations. One of the

major causes of uncertainty is the price variability faced by producers in selling their cattle. It may well be impossible to stop the fluctuations in farm income from cattle sales, indeed it may not even be desirable. The problem is to explain and if possible through an improvement in knowledge, to help eliminate the extreme fluctuations in live cattle prices.

## Hypotheses

It was hypothesized that:

(1) variations in price spreads explained a high percentage of the variations in live cattle prices;

(2) wholesale and retail beef price spreads vary inversely with live cattle prices, (One of the aims of this phase of the study was to examine short run fluctuations in the farm-retail spreads and their effect on live cattle prices);

(3) the increasing farm-retail beef price spread is due almost entirely to a rising retail margin;

(4) there is a tendency for stable retail beef prices which can lead to a retail spread more flexible than the wholesale spread;

(5) the wholesale spread bears a higher correlation to live cattle prices than the retail spread and

(6) live prices on any one individual market bear little or no relationship to the livestock receipts on that market.

## Scope of the Study

The scope of the study was limited to an examination of the behavior of the farm-retail beef price spreads in response to changes in total livestock slaughter, live prices, season of the year, wholesale beef prices and retail beef prices. It was not concerned with analyzing the construction and makeup of the price spreads themselves.

The extent of the study was narrowed by the lack of certain data. The necessary data was available for only Montreal, Toronto and Edmonton. Within the limitations of the data these three markets were examined in some detail.

## Weaknesses of Existing Data

The study of retail-farm price spreads is complex. Data used in computing price spreads in Canada are usually monthly averages, aggregated from many sales, by many retailers and processors. The data are the results of the operations of a great many firms in the livestock and meat industry. Each commodity price represents a composite of costs, which include, in addition to direct or operating costs, some share of the indirect or overhead costs, such as taxes, depreciation, executive salaries and the profit and losses of each firm. The problem of aggregation is further complicated because nearly all firms in the food industry process or sell more than one commodity.

In this study the farm-retail beef price spread was divided into two components, the wholesale price spread and the retail price spread.

The two divisions are fairly definite and available data allowed them to be readily separated. The wholesale beef price spread was defined as the absolute difference between the live price received by producers for their cattle and the wholesale carcass price received by the meat packer for his beef. No attempt was made to convert the weight of the live animal to dressed carcass weight. The retail price spread was defined as the absolute difference between the carcass price and a composite retail price.

Data used in the study covered a period from 1956 to 1963. The data were based on all sales made by the terminal markets, processors and retailers during this time. The study was limited to this period due to the fact that the necessary, complete information required for this study, was only available for this time period. A detailed discussion of the data in each section will introduce the pertinent chapter.

# CHAPTER II

## REVIEW OF LITERATURE

This review concerns literature pertaining to the behavior of the wholesale and retail beef price spreads, which constitute the farm-retail marketing spreads for beef. The majority of papers which were available on this subject were written from 1950 to 1958. Recently lower cattle prices and higher production costs have led producers and economists into further consideration of the marketing spread for beef.

In the United States, falling wholesale prices for beef, coupled with apparently steady retail prices, have prompted the United States Senate to investigate all factors influencing food prices, with particular emphasis on beef prices.

### Canadian Studies

One of the first studies in Canadian literature on marketing margins was Schroeder's article, published in 1950, (30). His article was brief, covering a great many commodities. He was concerned with annual marketing margins for selected farm commodities. His exploration into the field of marketing margins was incomplete and his method of determining the beef price spread has given to a simpler and more accurate method. To determine the farm-retail beef spread, Schroeder deducted the value of 1.92 pounds of live steer from the average retail price of one pound of beef. The inherent weakness in this method was the

assumption that the retail cutout value of a carcass of beef remained constant from 1935 to 1951. Schroeder calculated that the farmers' share of the retail price of commercial grade beef in Canada increased from 51.1 percent in 1935 to 68.2 percent in 1951, (Table I).

TABLE I. THE FARMERS' SHARE OF THE RETAIL PRICE
OF COMMERCIAL GRADE BEEF IN CANADA,
1935 - 1951

| Year | Percent | Year | Percent |
|---|---|---|---|
| 1935 | 51.1 | 1944 | 63.8 |
| 1936 | 48.6 | 1945 | 64.0 |
| 1937 | 57.7 | 1946 | 64.9 |
| 1938 | 50.7 | 1947 | 65.4 |
| 1939 | 54.8 | 1948 | 70.2 |
| 1940 | 57.0 | 1949 | 64.3 |
| 1941 | 61.2 | 1950 | 68.1 |
| 1942 | 65.5 | 1951 | 68.2 |
| 1943 | 65.0 | | |

Source: Schroeder, F.M., "Marketing Margins for Canadian Agricultural Products," The Economic Analyst, June 1952.

Woollam updated Schroeder's data in 1954 (39). The farmers' share of the retail price of beef remained very high until 1953 (Table II). Woollam assumed that marketing costs of beef were more than farm prices and that changes in retail prices were readily reflected in the proportion of the retail dollar that was recovered by the beef producer.

TABLE II. INDEX OF THE FARMERS' SHARE OF THE RETAIL PRICE OF BEEF, 1949 - 1953

| Year | Index |
|---|---|
| 1949 | 100.0 |
| 1950 | 99.8 |
| 1951 | 101.8 |
| 1952 | 98.9 |
| 1953 | 95.2 |

Source: Woollam, G.E., "Marketing Margins for Food in Canada," Economic Analyst, August 1954.

Woollam and Gilstorf brought the results of the previous studies up to date in 1956 (40). Again the whole complex field of commodity margins was dealt with on two pages. The farmer's share of the consumer's beef dollar was introduced as a percentage and as an index number. The grade of beef used in the study was switched from Commercial to Good.

One would expect the farmers' share of the commercial grade retail price to be closely associated with that of good grade beef. Woollam and Gilstorf drew this conclusion, despite the meager period of time under consideration in their study. They used only three years of actual comparison for commercial grade, (Table III). They concluded that from 1949 to 1955 the farm-retail marketing margin widened by 5 percent.

The publications listed consolidated both the wholesale and retail margins. They concerned the farmers' share of the consumers' dollar spent on beef. No attempt was made to explain the action of the beef price spreads.

TABLE III. THE FARMERS' SHARE OF THE RETAIL PRICE OF BEEF, 1949 - 1955

| Year | Commercial Grade Beef | Good Grade Beef |
|---|---|---|
| | (percent) | (percent) |
| 1949 | 64.3 | 64.1 |
| 1950 | 68.1 | 67.0 |
| 1951 | 68.2 | 71.0 |
| 1952 | | 62.0 |
| 1953 | | 57.0 |
| 1954 | | 58.0 |
| 1955 | | 59.0 |

Source: Woollam, G.E. and Gilstorf, R.C., "Marketing Margins and Farm Share of the Consumers' Food Dollar," Economic Analyst, June 1956.

It was not until 1957 that a more complete study of beef margins was undertaken in Canada. Wood (38) published a detailed study of beef margins in Manitoba. The main conclusions of the Manitoba Study were:

(1) the packer or wholesale margin had been quite variable and had not been closely associated with live prices of cattle;

(2) beef prices rose steadily after 1935, reached a peak in 1951, declined until 1954 and remained relatively stable until 1957;

(3) both the farm price and the beef marketing margin increased substantially during the 1935-1957 period;

(4) prices at all levels of the market have a strong tendency to rise and fall together;

(5) when expressed in constant dollars, the whole increase in

the margin occurred at the retail level;

(6) the producers' share of the retail dollar was highest when live prices were at their peak and lowest when live prices were low and

(7) marketing charges remained relatively stable.

Leckie (16) commented on the Wood study in an article in 1959. He agreed with Wood and further emphasized the variability of processing margins. In his opinion they were not associated with live cattle prices. Furthermore, the whole increase in the marketing margin for beef between 1935 and 1957 had occurred at the retail level.

### The Report of the Royal Commission into Price Spreads of Food Products - 1958, (27)

The problems in the beef industry were carefully outlined and the researchers did a commendable job in presenting the facts. The Commission in its desire to be non-controversial went to extremes in qualifying its results and few definite and positive recommendations were made.

The problem of price spreads of food products was a problem of changes in the relationship between retail prices and consequent changes in incomes. Over the last few years, farm prices have declined and food prices risen, therefore, it was apparent that the marketing spread had widened. Increasing consumer incomes and stronger demand have raised the retail price of beef. The pressure of increased supplies has pushed farm prices down. These general conditions have been favourable to the food marketing system generally. In addition, increased

concentration and integration in the food industry had exerted a further downward pressure on live cattle prices. The increased farm-retail spread represented higher prices for marketing services as a consequence of the desire by consumers and producers for more marketing services. In the economic climate prevalent in Canada, retailers and processors will buy their supplies as cheaply as possible and sell them to establish as high a return to themselves as possible.

The method used by the Royal Commission to determine the farm-retail spread will be discussed fully in Chapters III and V.

At a meeting of the Canadian Agricultural Economics Society in 1959, Marshall and Winder (21) and Drummond (6) exchanged opinions concerning the validity of the Royal Commission findings. The Commission's conclusion that there was no necessarily fixed relationship between the beef farm to retail price spread and the farm price was questioned. Information on price spreads was considered costly to obtain and difficult to interpret.

Marshall and Winder (21) concluded that the 64 percent increase in the farm retail spread from 1949 to 1957 was in part sample error, presumably because the terminal years of the study were not at comparable stages in the cattle cycle. There were strong implications that the narrower farm-retail spreads were associated with higher retail prices. It was accepted that the farm-retail beef price margin was relatively stable over the beef price cycle.

Marshall and Winder condemned the use of weighted price series in calculating the live cattle prices and other price series data used in determining the spread. The Commission report stated that live prices

of cattle were high in the spring and low in autumn, whereas, if actual data had been used, prices for all grades were highest in the summer and lowest in the early spring or late winter.

Drummond in defending the report asked that less emphasis be placed on measurements and more emphasis be placed on the economic inferences and interpretations found in the Commission's recommendations.

## Further Studies

The conventional explanation of marketing spreads representing nearly fixed amounts was not adequate for Breimyer (3). The orthodox view, that the calculation of live cattle prices involved the retail price of beef minus a nearly fixed marketing charge and that the retail price of beef was determined by the laws of supply and demand, left much to be desired. Breimyer found this explanation prevalent among economists because of the complexities in determining margins. Many economists tend to assume that margins are constant and change very little. Breimyer cites Hildreth and Jarrett (14) as including the assumption of a constant dollar or a constant percentage of margins or combinations of the two. Two reports in 1956 (2 and 23) however, highlighted the concept of changing margins. Margins did change in respect to strictly short term swings in prices. About 60 percent of the $ 4.15 per 100 pounds decline in farm prices for United States Choice Grade cattle, which took place from the first quarter of 1955 to the fourth quarter, was associated with widening marketing margins. From 1953 to 1956, 57 percent of the fluctuation of the retail price for beef was due to margin fluctuations.

Breimyer (3) further states:

> "With effective competition and without technological changes in processing or in the services rendered, one would expect margins to run parallel to trends in costs. Margins for meat conform to this rule. Livestock and meat margins have not only tended to drift upwards, but have exhibited a short run tendency to widen when supplies increase and narrow when supplies decrease. This adds to the instability of live cattle prices."

Breimyer concluded there was a desire in the beef trade for stability in beef prices, thus margins changed more than prices. The processor's desire to maintain constant volume narrowed his margin when the supply of live cattle was short. His reluctance to increase his kill widened the margin when the supply of cattle is large.

Buse and Brandow (4) were of the opinion that rising prices, as distinguished from high prices, usually reduced margins, because retail prices typically lagged behind farm prices.

Fuller and Ladd (11) held opposite viewpoints to those of Breimyer. Since the coefficient for the change in the wholesale price was positive, there was an indication that there was a decrease in the wholesale margin when the wholesale price decreased.

Phillips (22) maintained that it was impractical to consider that marketing margins were uniform. The gross margin was of greater importance to the retailer than the average price he charged. It is the overall margin for the store or major department with which the retailer is primarily concerned. The margin for a particular commodity was extremely variable. This conclusion was acceptable to Clifton (5) and Engleman (7). The packer-wholesale spread became wider in the fall as farmers began selling their hogs in sizeable numbers. In their cost

and margin studies, Clifton and Engleman became more and more aware of the fact that a major portion of the seasonal price change in live cattle prices had been due to changing margins. Large supplies of live animals forced a high demand for marketing services. Since the supply of marketing services was inelastic in the short run, the processor widened his margin.

Maki (18) discovered that retail and primary market prices were related to wholesale prices and wholesale spreads. A $ 10.00 increase or decrease (in 1947-1949 dollars) in the wholesale price of beef was associated with a $ 1.27 increase or decrease in the processor's spread and a $ .09 change in the retail spread. It therefore appeared that price spreads between market levels involved a fixed retail component and a variable wholesale component, which was inversely related to changes in the wholesale price. Changes in live cattle prices were related to changes in the rate of marketings as well as to changes in the wholesale price.

The literature reviewed showed a lack of agreement among economists in regard to the behavior of farm-retail beef price spreads, particularly in their response to changes in live cattle prices and total slaughter.

# CHAPTER III

# CATTLE PRICE RELATIONSHIPS

The data used in this chapter was obtained from the Livestock and Meat Report, published weekly by the Canada Department of Agriculture, (17). The material selected from this publication included the average monthly totals of cattle slaughtered in Canada at federal inspected meat packers and the number of "Good" grade cattle marketed and received on the terminal livestock markets in Canada. Estimates concerning the number of livestock marketed on the terminal markets vary from 50 percent (28) to 63 percent (27) of the total cattle marketed in Canada.

## Major Causes of Variations in Cattle Prices

The basic statistical proceedure followed in the analysis was to fit a multiple linear regression function by the method of least squares. The regression used was of the form,

$$X_1 = a + bX_2 + cX_3 + dX_4 + e$$

All regressions used in the study were included in the text despite the fact that some did not explain an appreciable amount of the variation in cattle prices. Since it was the objective of the study to explain some of the causes of variation in cattle prices, live cattle prices were chosen as the dependant variable.

In an attempt to test the hypothesis that variations in price spreads explained a high percentage of the variations in cattle prices, the wholesale and retail beef spreads were used as independant variables.

In addition live cattle receipts at the various terminal markets, as well as the total Canadian slaughter were considered.

Two stepwise regressions were performed on data obtained for each of the three markets involved. The first regression used the wholesale spread, the retail spread, and the livestock receipts on the market concerned as independant variables. The second regression equation used the wholesale spread, the retail spread and total Canadian cattle slaughter as independant variables.

Since the technique of stepwise regression is of recent development, a brief explanation of the proceedure involved is warranted. The independant variables were introduced into the regression equation, one at a time. At each stage that variable is added which accounts for the largest amount of variation in the dependant variable. In addition to the regression coefficients, other measures computed were, means, variances, standard deviation, simple or partial correlations, "t" values, "F" values and the coefficients of determination ($R^2$).

"t" tests for significance have been included in this text despite the use of data representing the total population. As long as there is a source of random variation or error involved in the data, then "t" tests are appropriate.[1]

In all the tables in the text, one star (*) will indicate

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[1] Professor J.R. McGregor, of the Department of Mathematics, University of Alberta, was of the opinion that the method by which the data was collected by the Canada Department of Agriculture, led to the inclusion of random error in the data.

significance at the 5 percent level, two stars (**) will indicate significance at the 1 percent level and N.S. will indicate failure to achieve significance at the 5 percent level.

All the regression equations used in the study and listed in Table IV, explained a high percentage of the variation in cattle prices. The importance of the wholesale and retail spreads, in explaining the variations in cattle prices, was illustrated by the high coefficients of determination ($R^2$) attained when the wholesale and retail spreads were introduced into the stepwise regressions. Furthermore, the regression coefficients attained in all the regression equations used in the study, demonstrated the absolute relationship between cattle prices and the two variables mentioned above as being positive and significant (Table IV).

When the regression equations for Toronto were considered, the wholesale spread and the retail spread had regression coefficients ranging from 1.10** to 1.13** for the former and .28** to .34** for the latter. The $R^2$ for the wholesale spread was .69, with .10, the $R^2$ value for the retail spread (Table IV).

The Montreal market exhibited similar results, although the regression coefficients and the $R^2$ values were somewhat lower. Regression coefficients for the wholesale spread ranged from .88** to 1.00**. $R^2$ values were .55 for the wholesale spread and .23 for the retail spread (Table IV). The retail spread on the Montreal market, explained a higher percentage of the variations in cattle prices than the retail spread at Toronto and Edmonton. The regression coefficient for the retail spread at Montreal was higher than the regression coefficient for the retail spread in

TABLE IV. RELATIONSHIPS BETWEEN CATTLE PRICES AND SELECTED VARIATIONS FOR THE TORONTO, MONTREAL AND EDMONTON LIVESTOCK MARKETS, FOR THE PERIOD 1956 - 1963

| Market | Regression Equation | Coefficient of Determination |
|---|---|---|
| Toronto | (a) $X_1 = 4.40 + 1.11^{**} X_3 + e$ | .69 |
| Toronto | (b) $X_1 = -.50 + 1.10^{**} X_3 + .30^{**} X_4 + e$ | .79 |
| Toronto | (c) $X_1 = -1.57 - .0001\text{N.S.} X_2 + 1.13^{**} X_3 + .34^{**} X_4 + e$ | .80 |
| Toronto | (d) $X_1 = 1.91 + 1.10^{**} X_3 + .28^{**} X_4 + 0.00^{\text{N.S.}} X_5 + e$ | .80 |
| Montreal | (e) $X_1 = 6.57 + .88^{**} X_3 + e$ | .55 |
| Montreal | (f) $X_1 = -1.75 + .92^{**} X_3 + .48^{**} X_4 + e$ | .78 |
| Montreal | (g) $X_1 = -2.76 - .001^{*} X_2 + 1.00^{**} X_3 + .49^{**} X_4 + e$ | .78 |
| Montreal | (h) $X_1 = .05 + .91^{**} X_3 + .53^{**} X_4 - .00001^{*} X_5 + e$ | .80 |
| Edmonton | (i) $X_1 = 8.74 + .72^{**} X_3 + e$ | .56 |
| Edmonton | (j) $X_1 = 1.80 + .74^{**} X_3 + .34^{**} X_4 + e$ | .66 |
| Edmonton | (k) $X_1 = 1.82 + .001^{*} X_2 + .79^{**} X_3 + .35^{**} X_4 + e$ | .68 |
| Edmonton | (l) $X_1 = .484 + .75^{**} X_3 + .30^{**} X_4 + 0.00\text{N.S.} X_5 + e$ | .67 |

$X_1$ Cattle prices received by farmers at the market.
$X_2$ Cattle receipts for the market.
$X_3$ Wholesale price spread for the market.
$X_4$ Retail price spread for the market.
$X_5$ Canadian cattle slaughter.

Toronto and Edmonton (Table IV).

In examining the regression equations for Edmonton, it was observed that the regression coefficients for the wholesale spread were the lowest of the three markets studied. The coefficients varied from .72** to .79**. The coefficients for the Edmonton retail spread ranged from .30** to .34**. $R^2$ values were .56 for the wholesale spread and .10 for the retail spread (Table IV).

The introduction of the individual market receipts and the Canadian cattle slaughter, contributed little or nothing to the explanation of variations in cattle prices (Table IV). The wholesale and retail beef spreads explain most of the monthly variation in cattle prices.

For the purpose of this study, enough information and evidence has been presented to warrant further investigation into the wholesale and retail spreads and their relationships with many other variables in the livestock industry.

## Relationships Among Major Markets

Monthly livestock receipts at Toronto, Montreal, Winnipeg, Calgary and Edmonton were compiled for the period 1943 to 1963. It was hypothesized that in a country as large as Canada, with its diversity in farming enterprises, there should be little correlation in the marketing of livestock, between the various market centres. However, all markets showed a high degree of correlation in marketings of livestock (Table V). Despite the range in climatic zones and the differences in farming practices encountered in each of the various market areas, producers across Canada marketed their cattle in approximately the same month, each year over the last 21 years. The high correlations between the

TABLE V. CORRELATIONS BETWEEN LIVESTOCK RECEIPTS ON SELECTED CANADIAN MARKETS - 1943-1963

| | Market | | | |
|---|---|---|---|---|
| Market | Montreal | Winnipeg | Calgary | Edmonton |
| Toronto | .560** | .712** | .715** | .604** |
| Montreal | | .476** | .538** | .408** |
| Winnipeg | | | .667** | .676** |
| Calgary | | | | .602** |

livestock receipts and marketings on selected Canadian markets, illustrate that producers across Canada react similarly to changes in market prices and conditions.

The correlation coefficient between livestock numbers marketed at Edmonton and Toronto ( .604)** was approximately the same as that for the Calgary and Edmonton ( .602)** (Table V). This is difficult to explain considering that Toronto is 2,400 miles from Edmonton while Calgary is only 200 miles from Edmonton. Marketings in Calgary were more closely correlated with those in Toronto ( .715)** than they were with those in Edmonton. Marketings in Toronto were more highly correlated with Winnipeg ( .712)**, Calgary ( .715)** and Edmonton ( .604)** than they were to Montreal ( .560)**, which is 300 miles from Toronto (Table V). The livestock feeding industry has not yet developed in Quebec to the level that it has on the rest of the markets studied. Operations are smaller and less attention is paid to price quotations, market news and supply and demand conditions in general. As the livestock feeding industry grows in Quebec, the correlation

coefficient for Toronto-Montreal should rise accordingly.

It is difficult to explain why the numbers marketed in Calgary were correlated more closely with numbers marketed in Toronto than the numbers marketed in Edmonton. Possibly the larger feedlot operators in the Calgary area are more sensitive to price movements than the smaller mixed farmers in the Edmonton area. Furthermore, the larger feedlot operator can and does spend more time buying and selling his livestock and it is only natural that he is better informed concerning livestock markets.

In Canada, livestock producers tend to react together in response to a given set of market conditions.

Correlations between livestock prices and livestock numbers were $.146^{N.S.}$ for Edmonton, .326** for Montreal and .505** for Toronto, (Table VI). It was hypothesized that the livestock numbers received on any one market bore little or no relationship to live prices received on that market. It was assumed that the total number of slaughter cattle received and slaughtered at all the markets across Canada was the important variable in establishing the live price for any one market. This assumption was shown to be of doubtful validity following an analysis of the regression equations used earlier in this chapter.

The Edmonton area is a large surplus producing area of beef (3). It had a correlation of $.146^{N.S.}$ between cattle receipts and cattle prices (Table VI). A high percentage of the beef produced in this area is exported to the west coast and eastern Canada. The wholesale price of beef in these areas thus influences the wholesale beef prices and live cattle

TABLE VI. CORRELATIONS BETWEEN LIVESTOCK PRICES AND LIVESTOCK NUMBERS ON SELECTED CANADIAN MARKETS, 1956 - 1963

| Market | Correlation |
|---|---|
| Edmonton | .146$^{N.S.}$ |
| Montreal | .326** |
| Toronto | .505** |

prices in the Edmonton area. Furthermore, only a small percentage of the processors' total cattle supply in the Edmonton area was bought on the terminal market.[1] Edmonton processors did not have to rely on receipts of livestock on the Edmonton terminal market for their meat supply. One can only assume that the commission agents on the terminal yards are well informed on current dressed meat prices across the country and try to adjust live prices accordingly despite the low correlation between livestock receipts on their market and cattle prices.

The low correlation between livestock prices and numbers in Montreal, .326** was expected because Quebec is a large deficit area for meat supplies (27). Since its beef supplies are obtained from across Canada, the number of slaughter cattle received on the Montreal market is not closely related to livestock prices on that market. However,

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[1] In the case of a large meat packing company in Edmonton, only approximately 14 percent of their total kill, in 1962 was from the Edmonton stockyards - Confidential Information.

there is a greater correlation between cattle prices and live numbers than at Edmonton because of the demand of certain retailers for fresh-killed beef. Montreal is a deficit area for beef supplies, hence the somewhat higher correlation between cattle prices and live receipts on the Montreal market than the correlation obtained on the Edmonton market.

The higher correlation ( .505)** between live cattle prices and live cattle numbers, obtained on the Toronto market does not support the hypothesis that cattle receipts on an individual market are not related to live prices received on that market (Table VI). There appears to be several reasons for this. Toronto retail chain stores have a dominant preference for fresh-killed beef. This statement stands for all chain stores in the Toronto area except one which will buy western heifers if the price differential is substantial. Many explanations might be brought forward for this behavior by the chain stores. The main reason given however, is the loss of bloom[1] and eye appeal in the retail beef cuts, which affects sales to the consumer. Furthermore, a large proportion of the processor's requirements are available at the terminal market.[2] Because of the retailer's need for fresh-killed beef and the large available supply on the terminal market, the processors are more sensitive to the total number of livestock received

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[1] Bloom as used in the text is defined as the freshness and quality of fresh killed beef which has not been subjected to the rigors of travel.

[2] Approximately 50 percent of a major meat packing company's total cattle kill in its Toronto plant was purchased on the Toronto stockyards, 1953-1960 - Source Confidential.

on the Toronto market and are more competitive.

## Influences of the Canadian Cattle Slaughter on Live Cattle Prices

The correlation between live cattle prices and the total Canadian kill was .104$^{N.S.}$ at Edmonton, .005$^{N.S.}$ at Montreal and .060$^{N.S.}$ at Toronto, (Table VII). It had been hypothesized that these correlation coefficients would be negative. There was, however, no correlation between live cattle prices and the total Canadian slaughter.

TABLE VII. CORRELATIONS BETWEEN LIVE CATTLE PRICES AND THE CANADIAN CATTLE SLAUGHTER ON SELECTED MARKETS, 1956 - 1963

| Market | Correlation |
|---|---|
| Edmonton | .104$^{N.S.}$ |
| Toronto | .060$^{N.S.}$ |
| Montreal | .005$^{N.S.}$ |

A simple regression equation, between cattle prices on the individual markets and the Canadian cattle slaughter was calculated. There was no apparent relationship between cattle prices and the Canadian slaughter (Table VIII).

TABLE VIII. RELATIONSHIP BETWEEN CATTLE PRICES AND THE CANADIAN CATTLE SLAUGHTER, FOR THE PERIOD 1956 - 1963

| Market | Equation Dependant | Constant | $X_1$ Coefficients of Independant Variable | $R^2$ |
|---|---|---|---|---|
| Toronto | $Y_1$ | 21.62 | $.000001^{N.S.}$ | 0.34 |
| Edmonton | $Y_2$ | 18.68 | $.00001^{N.S.}$ | 0.11 |
| Montreal | $Y_3$ | 22.50 | $.0000006^{N.S.}$ | 0.00 |

$Y_1$ Live Cattle Prices, Toronto
$Y_2$ Live Cattle Prices, Edmonton
$Y_3$ Live Cattle Prices, Montreal
$X_1$ Canadian Cattle Slaughter

# CHAPTER IV

## WHOLESALE BEEF PRICE SPREADS

### Data and Analysis

Monthly average cattle prices for the Edmonton, Calgary, Toronto and Montreal markets were considered (17). The grade chosen for specify study was "Canada Good." This grade represents a significant percentage (13 to 18 percent) of the livestock marketed in Canada and slaughtered at inspected packing houses (Table IX). The Royal Commission investigating price spreads for agricultural commodities used low-medium grade steers weighing up to 1000 pounds in their calculations of beef price spreads. The price of the low-medium light steers was obtained by computing the lower third of the price range for light weight medium steers. Such statistics were not available for this study. The method of computation used by the Royal Commission was awkward. Furthermore, there was no guarantee that this live price was the equivalent of a commercial grade beef carcass. It was decided to use the Good grade for this study. The prices of Good grade steers are just as accurately associated with Commercial grade beef as they are with low-medium grade cattle. The report of the Royal Commission on price spreads stated that Good grade steers were as comparable as Low-Medium Grade steers to Commercial Grade beef carcasses. This study is mainly concerned with the behavior of the price spreads. It is assumed that prices for Good grade steers reflect the cattle market generally and the live price of commercial steers specifically.

TABLE IX. GOOD GRADE CATTLE AS A PERCENTAGE OF ALL CATTLE SLAUGHTERED IN CANADA
1962 - 1963

| | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1962 | 16.1 | 16.3 | 17.3 | 17.4 | 16.4 | 15.9 | 14.4 | 13.6 | 13.5 | 12.6 | 12.8 |
| 1963 | 15.0 | 15.9 | 16.6 | 16.8 | 16.1 | 16.3 | 15.4 | 15.7 | 15.1 | 14.4 | 14.1 |

Source:"Livestock and Meat Trade Report" Market Information Section, Production and Marketing Branch, C.D.A.

To arrive at the value of the wholesale spread, the price per pound of a Good grade steer or heifer was subtracted from the wholesale price of a Commercial grade carcass of beef. This simple proceedure is open to some criticism because of the exclusion of by-product values. These values were reflected in the live prices the producer received for his livestock. Although monthly average values for by-products were not available for the entire period under study, they have become increasingly stable (Table X). For the purposes of this study, by-product values were assumed to have remained constant for the time period under consideration.

TABLE X. SUMMARY OF BY-PRODUCT VALUES FOR BEEF, CANADA, 1949 - 1958

| Year | Cents per Pound of by-products |
|---|---|
| 1949 | 2.4 |
| 1950 | 3.0 |
| 1951 | 4.0 |
| 1952 | 2.1 |
| 1953 | 1.9 |
| 1954 | 1.9 |
| 1955 | 1.9 |
| 1956 | 1.8 |
| 1957 | 1.9 |
| 1958 | 2.1 |

Source: "Report of the Royal Commission on Price spreads of Food Products," No. 21-1957/4-1, Queen's Printer, Ottawa, September 1959.

## Major Factors Affecting Wholesale Spreads

### General Behavior

The demand for a Royal Commission inquiry into price spreads in 1956 apparently was due to the very rapid advance in the wholesale spread for beef in the years preceeding 1957. The wholesale beef spread at Montreal, Edmonton and Toronto during the period 1956 to 1958 increased abnormally (Figures 1,2,3). Following 1958 and the publishing of the Royal Commission Report, the wholesale beef spread levelled off, then declined slightly in the years following 1959. This behavior was in contrast to the belief that the wholesale spread has been widening in recent years.

Automation and plant modernization, plus decreasing market power, have offset increased labour costs in the meat packing industry. If the marketing margin for beef is widening, then it would be necessary to examine the other phases of the marketing of beef to arrive at an explanation of this widening spread.

### Seasonal Behavior

The wholesale beef spread is not a fixed quantity. It fluctuates sharply, especially in the short run. Of the three wholesale beef spreads studied, the spread in the Edmonton market exhibited the most unusual behavior. Seasonal fluctuations in the spread on this market dropped from a high of 35 percent in 1956 to a low of 10 percent or less in 1962-1963, (Figure 4). This dramatic decrease coincided with the leveling off of the price spread in 1958-1959. Marketings of livestock in Edmonton over the period of a year, became more uniform during this

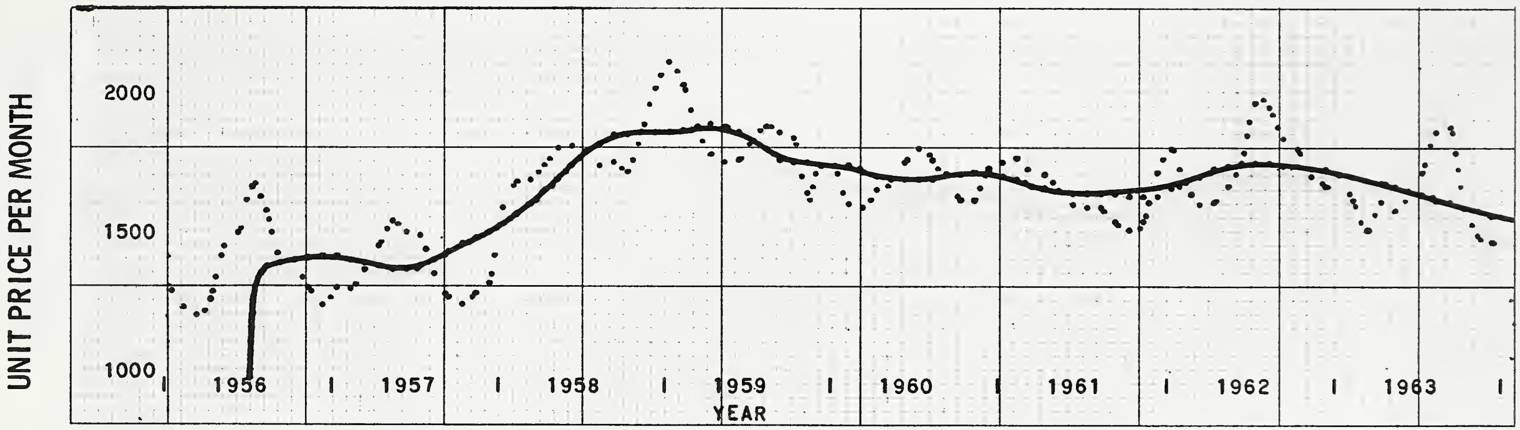

FIGURE 1. WHOLESALE BEEF PRICE SPREAD, TORONTO

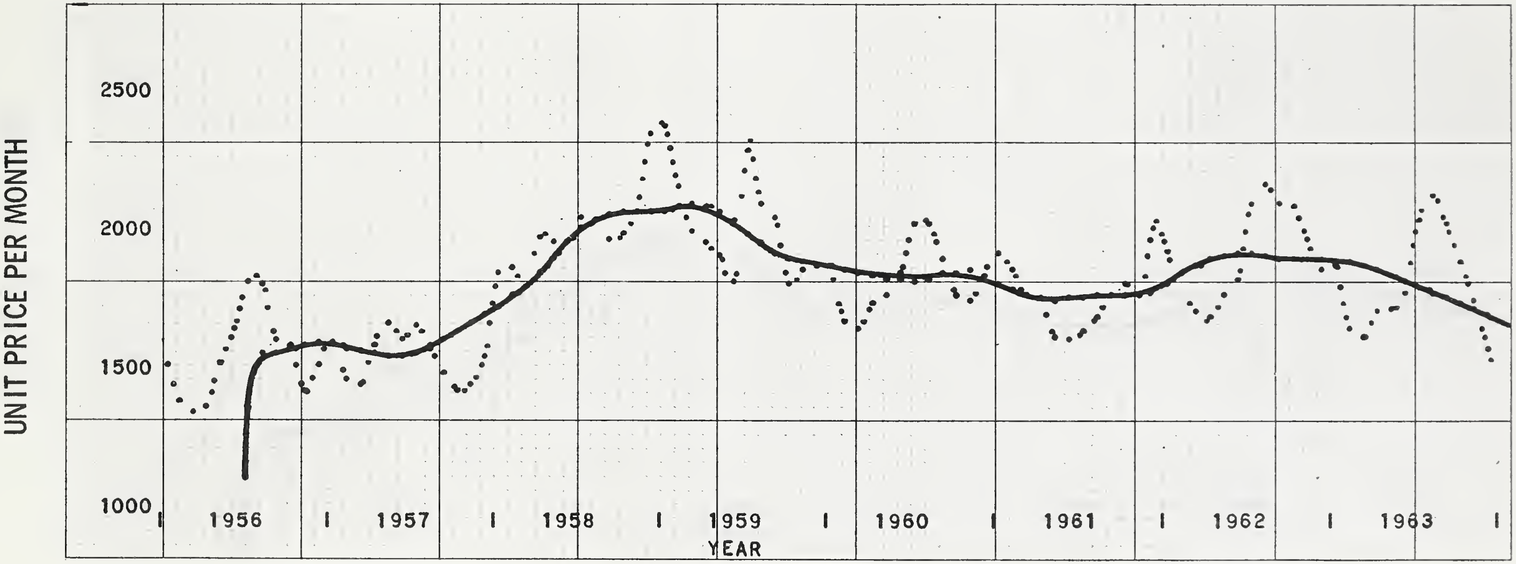

FIGURE 2. WHOLESALE BEEF PRICE SPREAD, MONTREAL

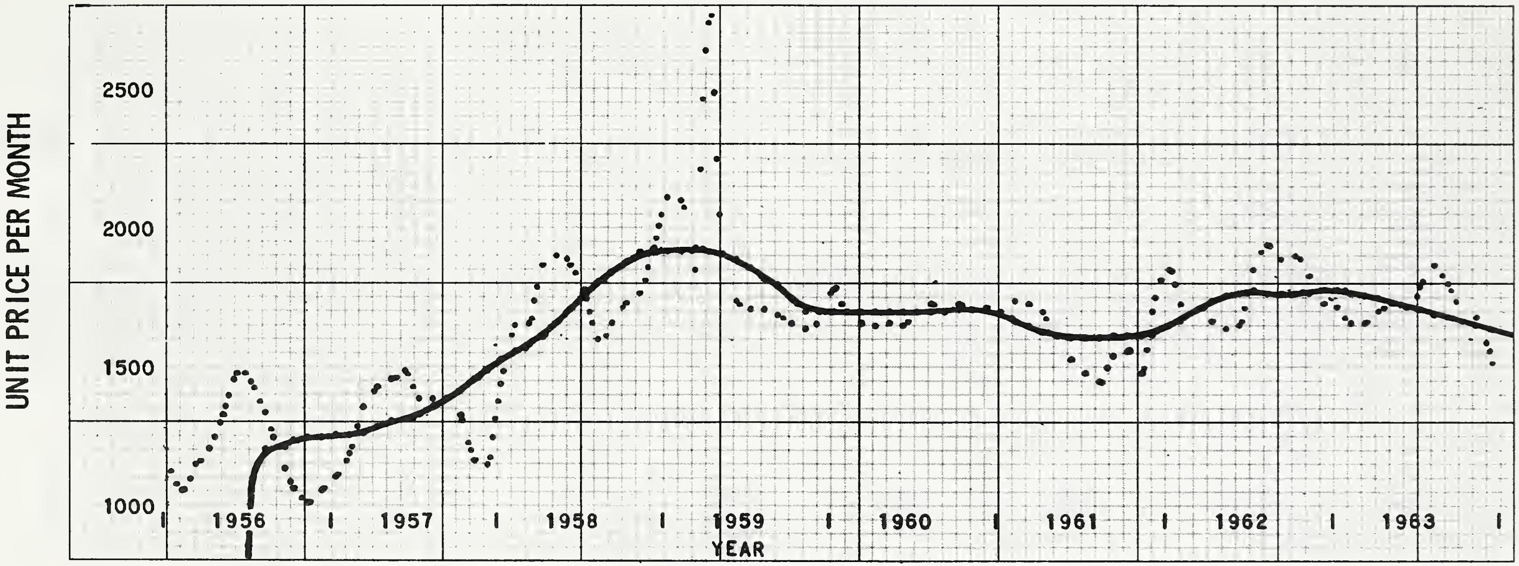

FIGURE 3. WHOLESALE BEEF PRICE SPREAD, EDMONTON

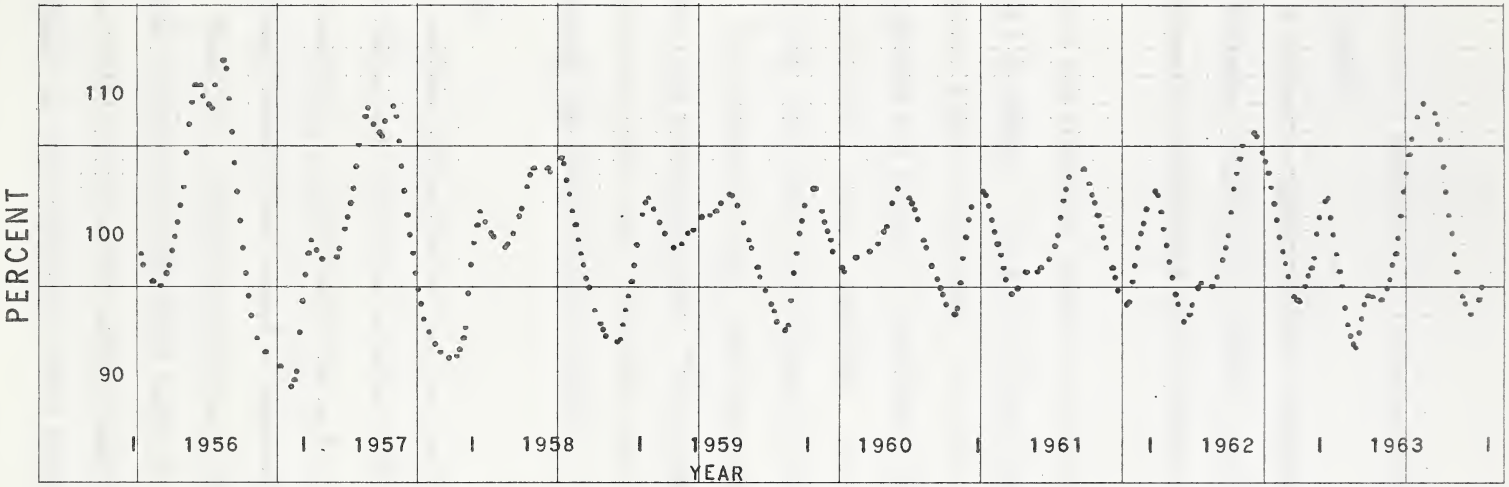

FIGURE 4. SEASONAL BEHAVIOR, WHOLESALE BEEF PRICE SPREAD, EDMONTON

period. This probably had a considerable influence in reducing seasonal fluctuations in the spread.

There was a 5 percent reduction in the fluctuation of the wholesale beef spread in Toronto, (Figure 5). However, there was little or no decrease in the seasonal fluctuations of the Montreal wholesale beef spread. (Figure 6).

It appears that the wholesale spread is lowest in the winter months and highest in the summer. It will be shown later that live prices and wholesale spreads are highly correlated. Thus the seasonal lows and highs in live cattle prices and spreads as outlined here are different from those obtained by the 1958 Royal Commission. The findings of the Commission had shown that live prices were highest in the spring and lowest in the fall. The findings of this study have been substantiated by Marshall and Winder (21) who stated that, "It is apparent that if actual livestock prices are used, then live prices and wholesale spreads are highest in the summer and lowest in the winter."

## Wholesale Beef Prices

Correlations between wholesale beef prices and wholesale beef spreads were .9** or higher for all three markets studied (Table XI). When carcass prices were high, spreads were high and vice versa.

The meat packing industry has tended to emphasize volume in its killing operations. There is a strong desire to maintain cattle slaughter at high levels in order to keep per unit fixed costs at a minimum. When a large supply of cattle reaches the market, most meat packers slaughter as many animals as their facilities will allow.

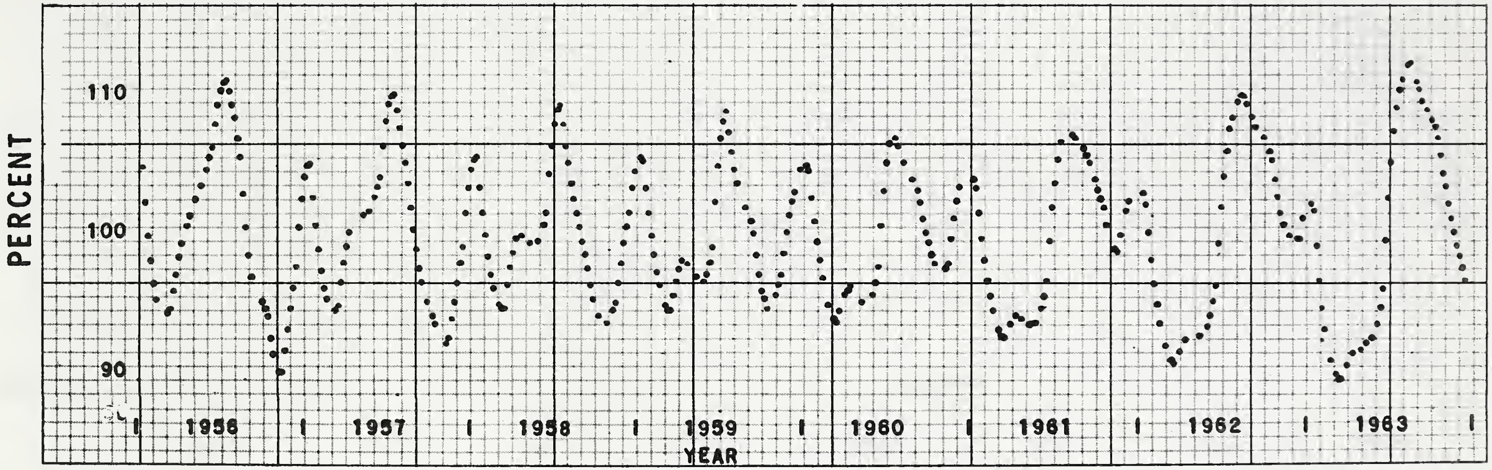

FIGURE 5. SEASONAL BEHAVIOR, WHOLESALE BEEF PRICE SPREAD, TORONTO

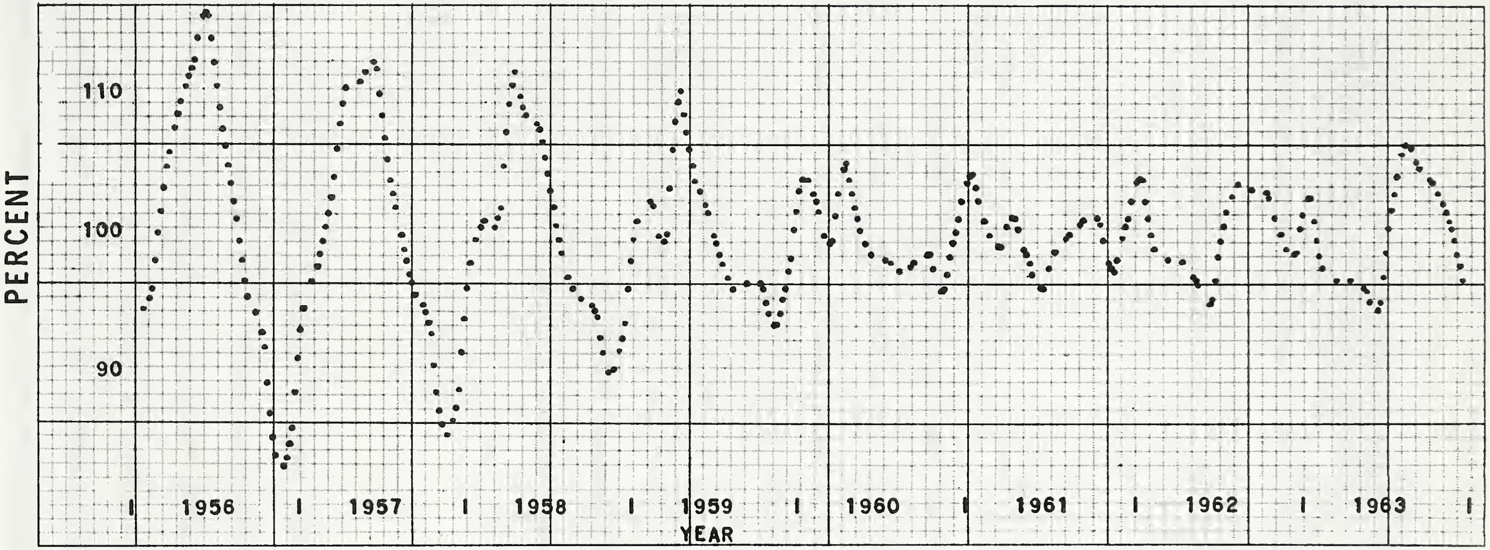

FIGURE 6. SEASONAL BEHAVIOR, WHOLESALE BEEF PRICE SPREAD, MONTREAL

TABLE XI. CORRELATIONS BETWEEN WHOLESALE BEEF PRICES AND WHOLESALE BEEF SPREADS ON SELECTED CANADIAN MARKETS, 1956-1963

| Market | Correlation |
|---|---|
| Toronto | .944** |
| Montreal | .920** |
| Edmonton | .937** |

According to the economic laws of supply and demand, when large numbers of livestock are available, live prices are low, wholesale prices are low, wholesale spreads are low and per unit fixed costs are low. The decrease in per unit fixed costs may be offset by a loss of bargaining power with the corporate chain buyers. When there is an abundance of beef available to the chain stores, their beef buyer can and does have a high degree of bargaining power. When slaughter becomes small, per unit fixed costs rise but so does the meat packer's selling power. He is able to widen his spreads. The meat packer has an interest, therefore, in the orderly marketing of cattle by the producer.

## Cattle Receipts

The wholesale beef spread for Edmonton is more closely related to receipts on the Toronto Market ( .592),** and the Montreal market ( .402),** than it is to its own receipts, ( .341),** (Table XII). With the surplus of beef available in the Edmonton area, it is logical that the supply of livestock on the Toronto and Montreal cattle markets plays an important part in determining the extent of the Edmonton spread.

TABLE XII. CORRELATIONS OF CATTLE RECEIPTS WITH WHOLESALE BEEF SPREADS ON SELECTED CANADIAN MARKETS 1956-1963

| Cattle Receipts | Wholesale Spreads<br>Toronto | <br>Montreal | <br>Edmonton |
|---|---|---|---|
| Toronto | .513** | .326** | .592** |
| Montreal | .495** | .518** | .407** |
| Edmonton | .248** | .168$^{N.S.}$ | .341** |

The supply on the Montreal market has a high correlation with the wholesale beef spreads of Toronto ( .495),** Edmonton ( .513)** and Montreal ( .407),** (Table XII). Again, since Montreal is a large deficit area for beef supplies, one would expect beef wholesale spreads on all three markets to be closely related to the supply of livestock on the Montreal market.

As was stated earlier, Toronto processors buy substantial amounts of livestock on the Toronto market. Consequently, the wholesale beef spread in Toronto was highly correlated ( .513)** with the number of cattle marketed on the terminal market in Toronto (Table XII).

### Wholesale Price Spreads for Individual Markets

There was a correlation between the Toronto and Montreal wholesale spreads of .918.** Edmonton and Toronto had a correlation of .847** between their respective wholesale spreads. Edmonton and Montreal had a correlation of .765** between their wholesale spreads (Table XIII). These three wholesale spreads are closely correlated. With live prices,

TABLE XIII. CORRELATIONS BETWEEN THE WHOLESALE BEEF SPREADS OF EDMONTON, TORONTO AND MONTREAL 1956-1963

| Market | Montreal | Edmonton |
|---|---|---|
| Toronto | .918** | .837** |
| Montreal | | .764** |

live numbers and wholesale prices all highly correlated, it was not unexpected that the wholesale spreads were also highly correlated.

## Influence of Wholesale Beef Spreads on Live Cattle Prices

On all three markets there existed a high degree of correlation between cattle prices and wholesale beef spreads. The correlation was highest in Toronto, .832.** The correlation at Edmonton was .746** and in Montreal .740** (Table XIV). These correlations indicated that there was a close relationship between cattle prices and the wholesale beef spread. Breimyer (3) found that a similar relationship existed, except that his correlations were negative. However, this study was concerned with the total farm-retail spread and not just the wholesale spread. The apparent difference between the correlations obtained in this study and Breimyer's study may be explained by the relationship between the retail spread and live cattle prices. If there is a negative correlation between live prices and the farm-retail spread and since a positive correlation between the wholesale spread and cattle prices was found then the retail spread must dominate the action of the wholesale spread.

TABLE XIV. CORRELATIONS BETWEEN LIVE CATTLE PRICES AND WHOLESALE BEEF SPREADS ON SELECTED CANADIAN MARKETS, 1956-1963

| Market | Correlation |
|---|---|
| Toronto | .832** |
| Montreal | .740** |
| Edmonton | .746** |

# CHAPTER V

## WHOLESALE BEEF PRICES

Wholesale beef prices, in the markets under study showed a high degree of correlation, .9** or higher (Table XV). This may be due to either the efficiency of the wholesale beef pricing system or the high degree of concentration found in the beef industry. Modern methods of communication used in this section of the beef industry have tended to merge all the meat markets in Canada into a single unit. The three largest meat packers have representatives on all the major beef markets in Canada. They each possess an excellent teletype system. Each company is closely informed about the operations of its competitors. This high degree of knowledge allows for a flexible pricing system. Reactions to competitors' sales are immediate. The decision to buy, sell or remain on the market is made on the spot. Under these conditions, an extremely high correlation between wholesale carcass prices on the various markets results.

TABLE XV. CORRELATIONS OF WHOLESALE BEEF PRICES
BETWEEN SELECTED CANADIAN MARKETS, 1956-1963

| Market | Montreal | Vancouver | Edmonton |
|---|---|---|---|
| Toronto | .991** | .955** | .961** |
| Montreal |  | .950** | .951** |
| Vancouver |  |  | .946** |

## Major Factors Affecting Wholesale Beef Prices

### Livestock Numbers

Since livestock prices and wholesale prices were highly correlated, wholesale prices are related to livestock numbers in a manner similar to the relationship existing between live prices and livestock numbers.

Edmonton had a correlation of .262,** Montreal .443** and Toronto .530,** between wholesale meat prices and livestock numbers (Table XVI). The number of cattle available for slaughter at the three terminal markets appears to be more closely correlated to wholesale prices than live prices.

TABLE XVI. CORRELATIONS BETWEEN WHOLESALE CARCASS PRICES AND LIVESTOCK NUMBERS ON SELECTED CANADIAN MARKETS 1956-1963

| Market | Correlation |
|---|---|
| Edmonton | .262* |
| Montreal | .443** |
| Toronto | .530** |

### Live Cattle Prices

The correlation between wholesale beef prices and live cattle prices, on the markets studied was high, (Table XVII). This phase of the study was limited by a lack of available data to the Edmonton, Toronto and Montreal Markets. Cattle prices on these markets apparently were a reflection of wholesale beef prices or vice versa. This may cause the processors some small amount of satisfaction and may in turn,

ease some of the producers' concern in the pricing of his live cattle.

TABLE XVII. CORRELATIONS BETWEEN LIVESTOCK PRICES AND WHOLESALE BEEF PRICES ON SELECTED CANADIAN MARKETS, 1956-1963

| Market | Correlation |
|---|---|
| Edmonton | .932** |
| Montreal | .944** |
| Toronto | .968** |

# CHAPTER VI

# RETAIL PRICE SPREADS

## Data and Analysis

The average of monthly retail prices for six selected retail meat cuts, (36 and 37), comprising 80 percent of the total carcass, were weighted by the percentage cutout obtained in the Royal Commission Report, (27) (Table XVIII). An aggregated retail figure was thus obtained for Canada. Cutout values are highly variable.1/ They vary from one business to another, as well as from one section of the country to another. Rather than attempt to proceed with figures which might contain regional or personal bias, the Royal Commission figures were accepted for the purpose of this study.

The wholesale beef price was subtracted from the aggregate retail beef price to determine the retail spread. The wholesale beef prices were obtained from the three individual markets whereas the retail beef price represented Canada as a whole. This presents a problem in comparing the three markets as to actual differences in the retail spreads. Any inferences concerning the absolute differences in the retail spreads between the markets should be made carefully.

There was a definite upward trend in the retail beef spread in each of the three markets studied during the period 1956-1963, (Figures 7,8,9). This action was in contrast to the performance of the

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1/Professor R.T. Berg, of the Department of Animal Science, University of Alberta, was consulted concerning the cutout figures used. He stated that the 1958 Royal Commission figures were reasonable.

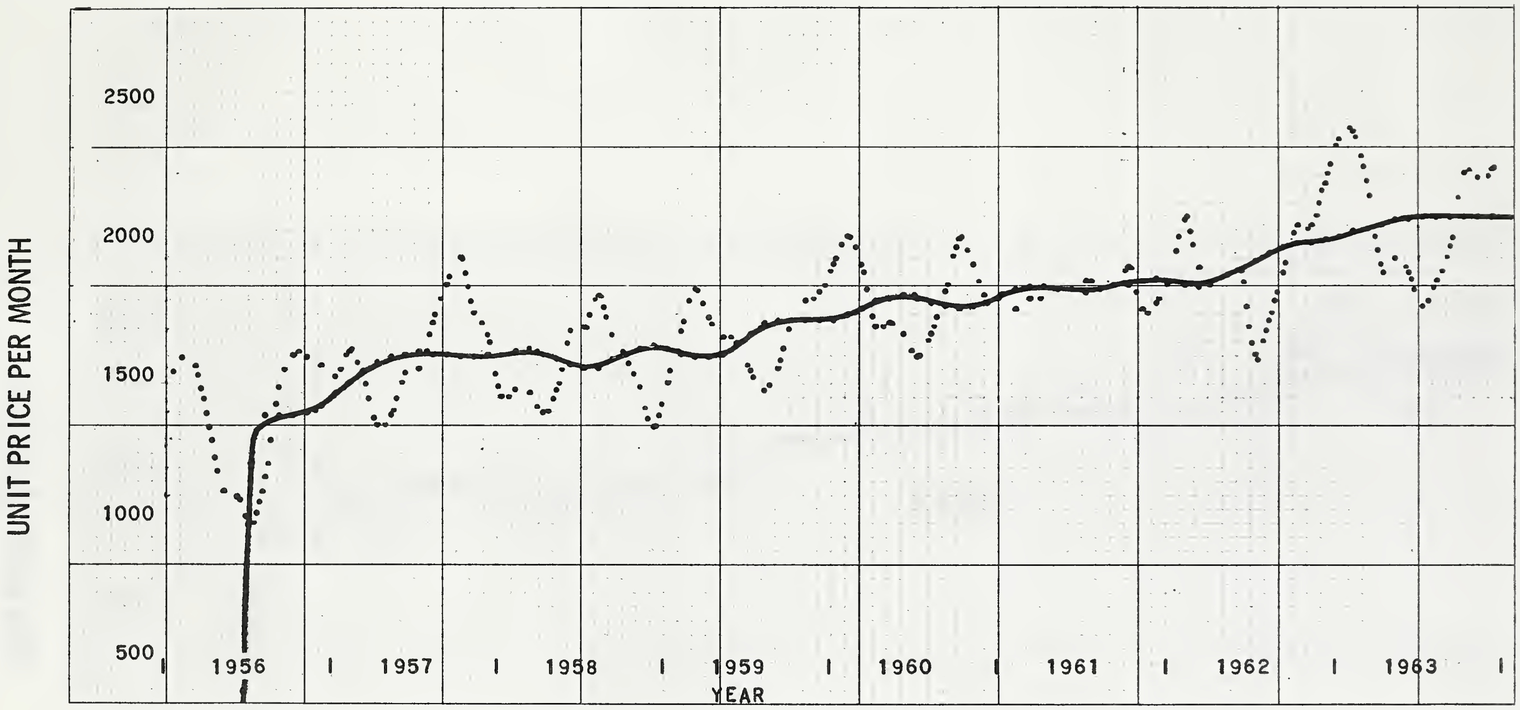

FIGURE 7. RETAIL BEEF PRICE SPREAD, TORONTO

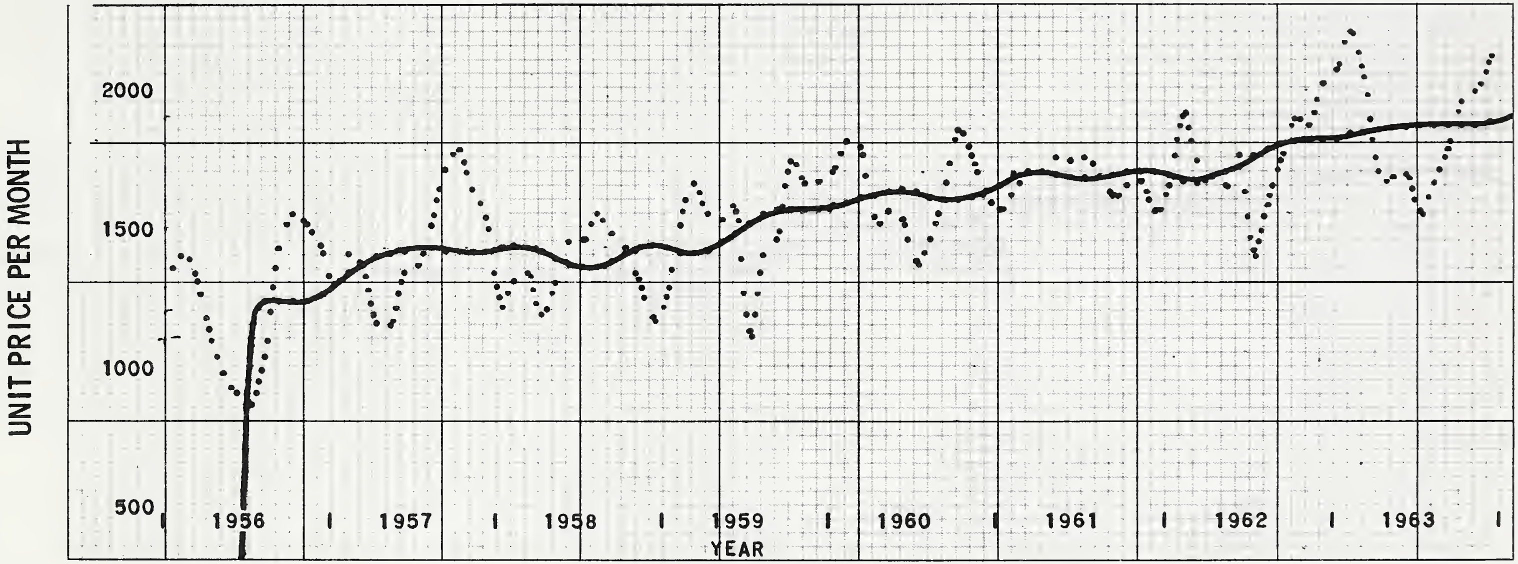

FIGURE 8. RETAIL BEEF PRICE SPREAD, MONTREAL

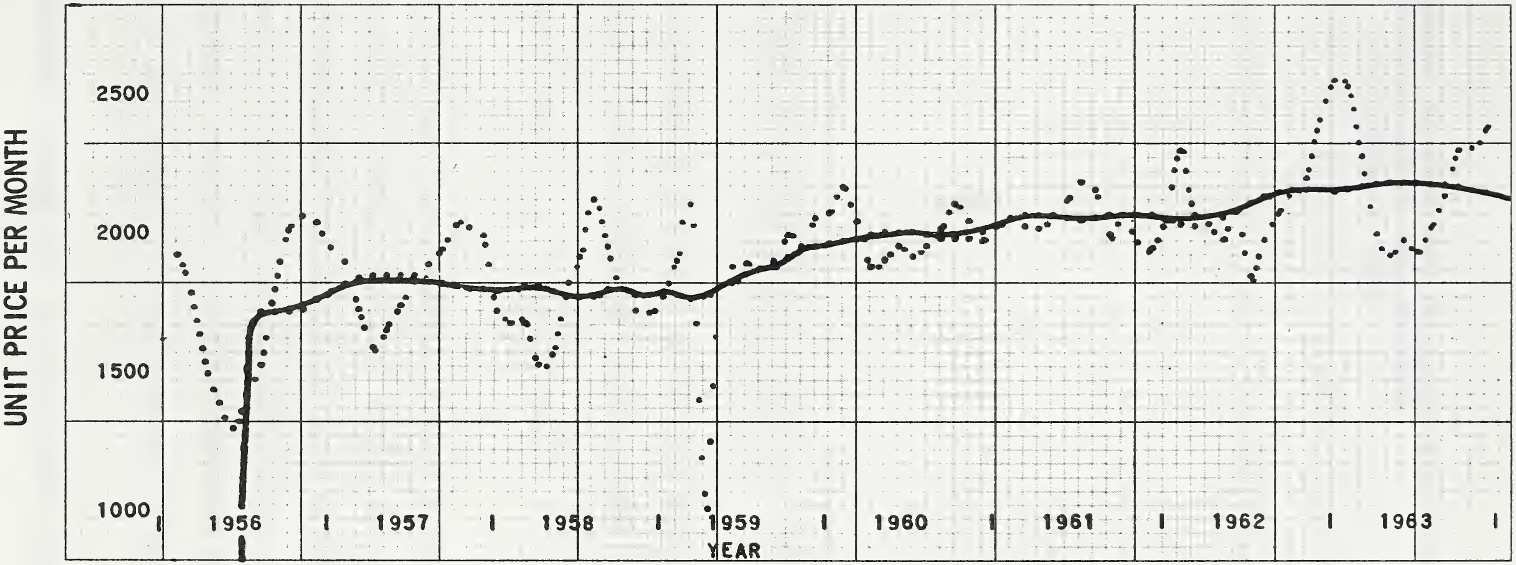

FIGURE 9. RETAIL BEEF PRICE SPREAD, EDMONTON

TABLE XVIII. PERCENTAGE CUTOUT OF THE SIX RETAIL CUTS USED IN DETERMINING RETAIL PRICE OF BEEF FOR CANADA - 1958

| Cut | Percent |
|---|---|
| Sirloin | 14.0 |
| Round Steak | 13.5 |
| Rib Roasts | 8.0 |
| Blade Roasts | 16.5 |
| Stewing Beef | 8.5 |
| Hamburger | 20.0 |
| Waste | 19.5 |

Source: Report of the Royal Commission on Price Spreads of Food Products, No. 21-1957/4-1, Queen's Printer, Ottawa, September 1959.

wholesale spread. Any increase in the total farm-retail beef price spread must be due to the increase in the retail beef price spread.

## Retail Price Spreads for Individual Markets

### Edmonton

Until 1959 the retail spread in Edmonton pursued a fairly level course at 2 to 4 cents above the retail spread at Toronto or Montreal. The retail spread at Edmonton rose from 17 cents in 1959 to approximately 22 cents in 1963 (Figure 9). This gave Edmonton the highest retail spread of the three markets studied. The retail spread in Montreal in 1963 was 18 cents a pound while in the Toronto the retail spread was 20 cents a pound.

Seasonal fluctuations (Figure 10), of the Edmonton retail spread

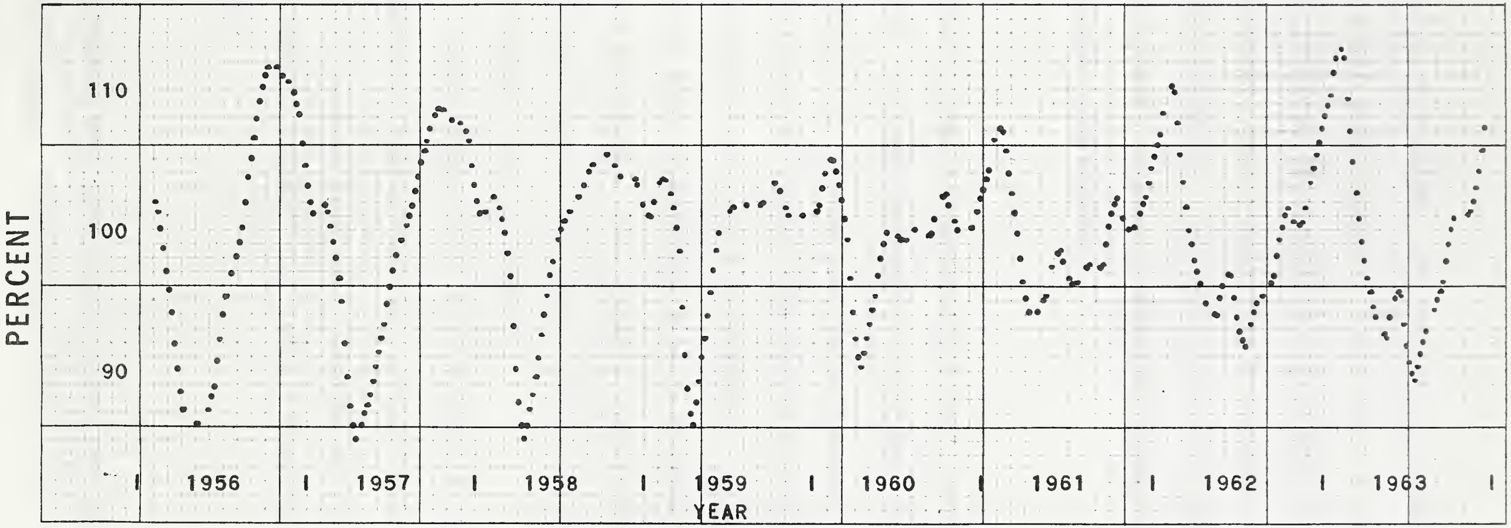

FIGURE 10. SEASONAL BEHAVIOR, RETAIL BEEF PRICE SPREAD, EDMONTON

were from 15 percent to 25 percent, with 20 percent representing the average. While the eight year period is too short a period to establish a long term seasonal pattern, the seasonal retail spread at Edmonton appeared to be considerable more stable than the seasonal retail spreads at Toronto and Montreal. The retail spread at Edmonton was highest in the early winter, followed almost immediately by a sharp drop, to the low point, in the late winter.

### Montreal

The retail beef spread in Montreal was the narrowest of the three markets studied. In 1956 the Montreal beef spread was four cents below Edmonton's (Figure 8), and one cent below Toronto's. In 1963 it was still four cents below the retail beef spread in Edmonton and it was two cents below the retail beef spread in Toronto. The retail beef business in Montreal is more competitive than in Edmonton and slightly more competitive than in Toronto. The greater volume of retail beef business done in Toronto and Montreal may allow retailers to work with smaller retail beef margins than in Edmonton.

The Montreal retail beef spread illustrated the fact that seasonal fluctuations were greater and more frequent over the period 1956-1963, than the retail beef spreads of Toronto and Edmonton. Fluctuations in the Montreal retail beef spreads were from 10 to 35 percent, (Figure 11).

### Toronto

The Toronto retail beef spread was stable from 1956 to 1960, at approximately 14 to 15 cents. It rose gradually to 1961, then it rose

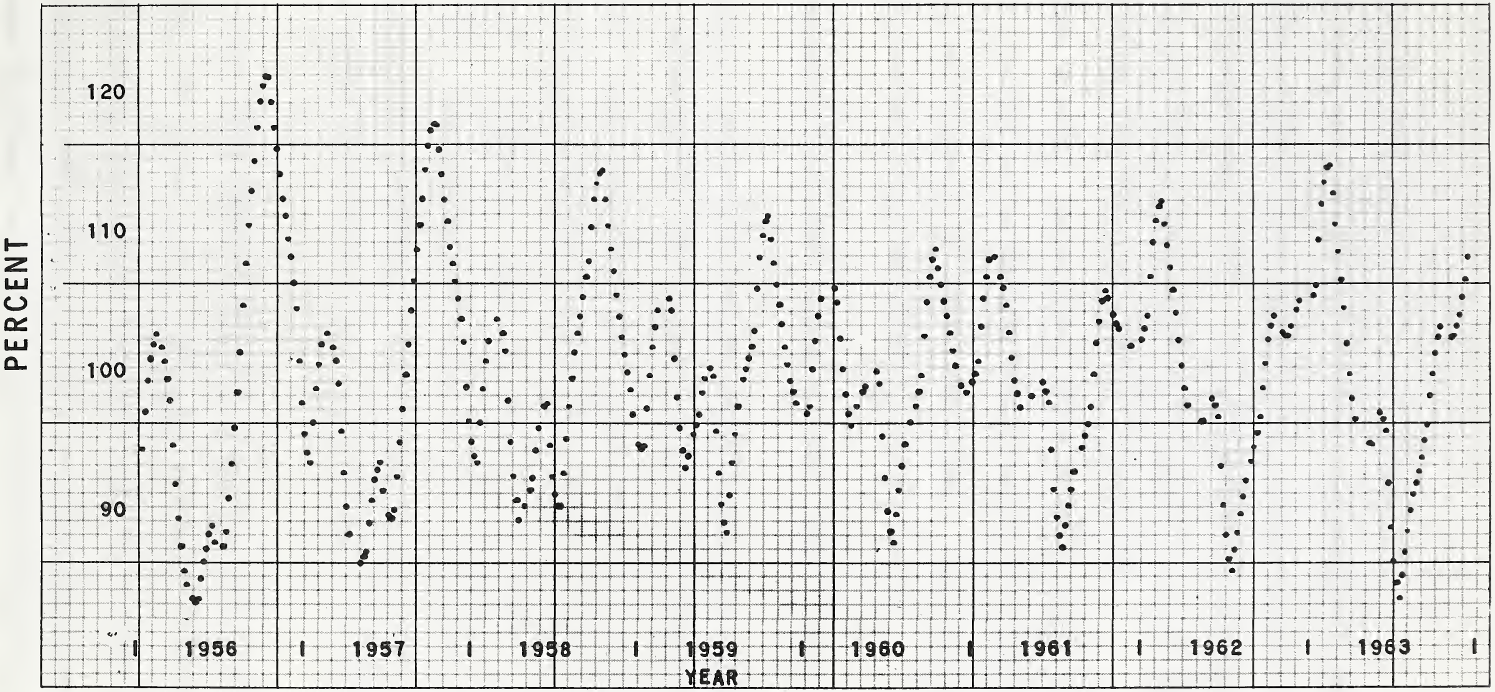

FIGURE 11. SEASONAL BEHAVIOR, RETAIL BEEF PRICE SPREAD, MONTREAL

rapidly, reaching its 1963 level of 20 cents (Figure 7).

In 1956 there was a 30 percent seasonal fluctuation in the retail spread for Toronto. This narrowed sharply to 10 percent in 1958 and stabilized at 10 percent until 1961. In 1962 to 1963 it increased to 25 percent. This greater price fluctuation corresponded in time with a rapid increase in the long term price spread (Figure 12).

The narrow seasonal fluctuations of the Toronto spread from 1958 to 1961, marked a period in the Toronto area of intensive retail competition, due to the overexpansion of retail facilities. From 1962 to 1963, the population increased enough to offset this overcapacity.

## Influence of the Retail Spread on Live Cattle Prices

The positive correlations between retail spreads and live cattle prices are only approximately half as large as the correlations between the wholesale beef spread and live cattle prices described in an earlier chapter. Correlations between the retail beef spread and live cattle prices were .273** at Edmonton, .327** at Montreal and .359** at Toronto (Table XIX). These correlations are fairly high and illustrate that retail beef spreads react similarly to live cattle prices, even though they are not as highly correlated to live cattle prices as the wholesale beef spread.

These results when combined with the wholesale beef spread correlations with live cattle prices, show that the total farm-retail marketing spread is high when cattle prices are high and is low when cattle prices are low. This study has shown, in the period under study, results which were in direct contrast to the results published by

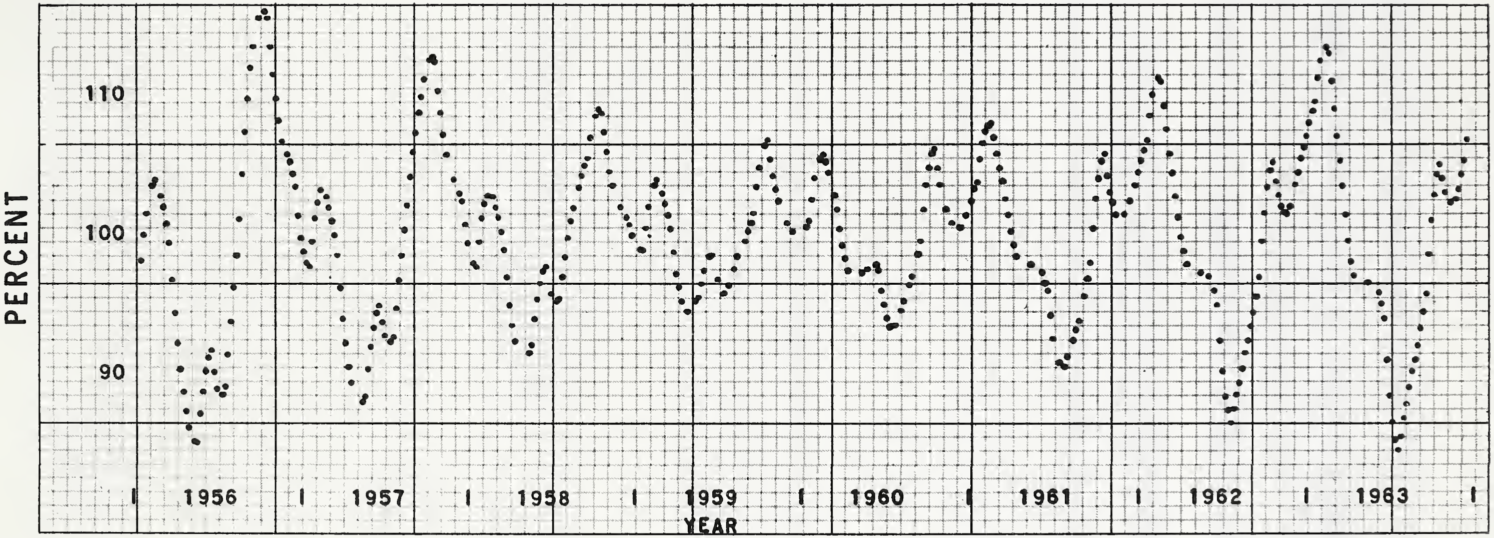

FIGURE 12. SEASONAL BEHAVIOR, RETAIL BEEF PRICE SPREAD, TORONTO

Breimyer and the United States Department of Agriculture. The actions of wholesalers and retailers in Canada tended to cut beef consumption when retail beef prices were high and raise it when beef prices were low. Beef spreads were adjusted upwards and downwards with changing beef prices.

TABLE XIX. CORRELATIONS BETWEEN LIVE CATTLE PRICES AND THE RETAIL BEEF PRICES SPREAD

| Market | Correlation |
|---|---|
| Toronto | .359** |
| Montreal | .421** |
| Edmonton | .273** |

# CHAPTER VII

# RELATIONSHIPS AMONG WHOLESALE SPREADS, RETAIL SPREADS AND THE CANADIAN CATTLE SLAUGHTER

## Wholesale and Retail-Beef Price Spreads

There were greater seasonal variations in the retail beef spreads (Figures 10,11,12), than there were in the wholesale spreads (Figures 4, 5,6). Possibly the retailer can adjust his spread to meet varying conditions, while the wholesaler meets considerable reaction to price changes from the large corporate chain stores. This reaction tends to reduce variations in the wholesale spread.

There was very little correlation between the wholesale and retail price spreads. The correlation between the wholesale beef spread and the retail beef spread at Edmonton was $-.059^{N.S.}$, Montreal $-.067^{N.S.}$ and at Toronto $.057^{N.S.}$ (Table XX).

TABLE XX. CORRELATIONS BETWEEN THE WHOLESALE BEEF SPREAD AND THE RETAIL BEEF SPREAD 1956-1963

| Market | Correlation |
|---|---|
| Edmonton | $-.059^{N.S.}$ |
| Montreal | $-.067^{N.S.}$ |
| Toronto | $.057^{N.S.}$ |

There was a positive correlation between livestock supplies on the selected markets and the wholesale spread. Coefficients were .513** for Toronto, .518** for Montreal and .341** for Edmonton (Table XXI).

TABLE XXI. CORRELATIONS BETWEEN LIVESTOCK SUPPLY AND
WHOLESALE BEEF SPREAD ON SELECTED
CANADIAN MARKETS 1956-1963

| Market | Correlation |
|---|---|
| Toronto | .513** |
| Montreal | .518** |
| Edmonton | .341** |

Only on the Toronto market was there a high degree of correlation between the number of cattle on that market and the retail beef price spread. The correlation for Toronto was .435,** Montreal $.015^{N.S.}$ and Edmonton $.016^{N.S.}$ (Table XXII). The total supplies of livestock received on the markets affected all the wholesale spreads, but only the Toronto retail spread.

TABLE XXII. CORRELATIONS BETWEEN LIVESTOCK SUPPLY AND
RETAIL BEEF SPREAD ON SELECTED
CANADIAN MARKETS 1956-1963

| Market | Correlation |
|---|---|
| Toronto | .435** |
| Montreal | $.015^{N.S.}$ |
| Edmonton | $.016^{N.S.}$ |

## Canadian Cattle Slaughter

There was a slight negative correlation between the wholesale beef spread and the Canadian cattle slaughter, $-.151^{N.S.}$ for Toronto,

$-.105^{N.S.}$ for Montreal and $-.128^{N.S.}$ for Edmonton (Table XXIII). There was a strong positive correlation between the retail spread and Canadian cattle slaughter; .356** at Toronto, .393** at Montreal and .366** at Edmonton, (Table XXIV).

TABLE XXIII. CORRELATIONS BETWEEN THE CANADIAN CATTLE SLAUGHTER AND THE WHOLESALE BEEF SPREAD ON SELECTED CANADIAN MARKETS 1956-1963

| Market | Correlation |
|---|---|
| Toronto | $-.151^{N.S.}$ |
| Montreal | $-.105^{N.S.}$ |
| Edmonton | $-.128^{N.S.}$ |

Since live cattle prices and the wholesale spread were highly correlated the negative correlation between the Canadian slaughter and the wholesale spread was expected. The positive correlation between the retail beef spread and Canadian slaughter was somewhat puzzling due to the positive correlation between cattle prices and the retail spread. This correlation was, however, only half as high as the correlation between cattle prices and the wholesale spread. The very high positive correlation between cattle prices and wholesale spreads corresponded to a very small negative correlation between the wholesale spread and the Canadian cattle slaughter. A much lower positive correlation between the retail spread and cattle prices than that shown between the wholesale spread and cattle prices, corresponded to a positive correlation between the retail spread and the Canadian slaughter.

TABLE XXIV. CORRELATIONS BETWEEN THE CANADIAN CATTLE SLAUGHTER AND THE RETAIL BEEF SPREAD ON SELECTED CANADIAN MARKETS, 1956-1963

| Market | Correlation |
|---|---|
| Toronto | .356** |
| Montreal | .393** |
| Edmonton | .366** |

While the Canadian slaughter influences the retail spread, it does not bear any relationship with the wholesale spread. Cattle prices have a moderate effect on the retail spread, but, they have a dominant effect on the wholesale spread. The processors' spread is strongly related to the cattle prices while the retail spread is associated with the Canadian slaughter.

# CHAPTER VIII

## SUMMARY

The wholesale beef spread and the retail beef spread explain most of the monthly variation in cattle prices.

In the short run, retail and wholesale spreads are flexible and closely related to cattle prices, the wholesale spread more than the retail spread. Retail spreads in the short run appear more flexible than the wholesale spreads.

In the longer run, the wholesale spread has remained steady or declined. The retail spread for beef has been steadily increasing. Thus any increase in the farm-retail spread has come from increases in the retail spread.

Wholesale spreads, live cattle prices, wholesale prices were highly correlated on all three markets studied. Retail spreads were less closely correlated with cattle prices than were wholesale spreads. Wholesale and retail spreads were not correlated.

The total supply of livestock available for slaughter on the Toronto stockyards appeared to be the main link in the relationships between live prices, wholesale prices, the wholesale beef spread and the retail beef spread on the Toronto Beef Market. Toronto was the only market where the total receipts on that market had any influence on the retail beef spread. Toronto and Montreal had high correlations between cattle prices and the wholesale spreads. Since on the three markets studied, live cattle prices were highly correlated, the total supply of

cattle on the Toronto terminal market gains increased significance. Increased attention by western cattle producers to livestock receipts in Toronto is warranted.

There is a strong relationship between cattle prices and the wholesale spread and a moderately strong association between the Canadian slaughter and the retail spread.

## Recommendations for Further Study

The concept of countervailing power popularized by J.K. Galbraith some years ago is now entering a new phase in the beef industry in Canada. Galbraith is quoted as stating, " . . . . . . . one of the most important instruments for exercise of countervailing power is the large retail organization. They are the public's main line of defence against the market power of those who produce or process goods (12)."

It now appears that if the producer is to get increased prices for his livestock, he must control the marketings of his livestock so as to increase the countervailing power of the processor and himself. This allows the processor to increase his spread and the producer to increase his returns at the expense of the retailer and perhaps the consumer. This statement may seem unusual. However, when cattle prices were high, returns to the producers and processors were high. High cattle prices benefited both the producer and the processor. The recent increased cooperation and change in basic attitudes between the two groups may mean that both parties have already reached the conclusion that their aims are similar. Further research into this section of the study is warranted.

The balance of power is extremely fine, but the extraordinary growth of the corporate chain store focusses attention on their actions in widening the farm-retail price spread, both by a downward pressure on wholesale beef prices and their reluctance to pass the full effect of wholesale beef prices on to the consumer.

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